FIG. 1

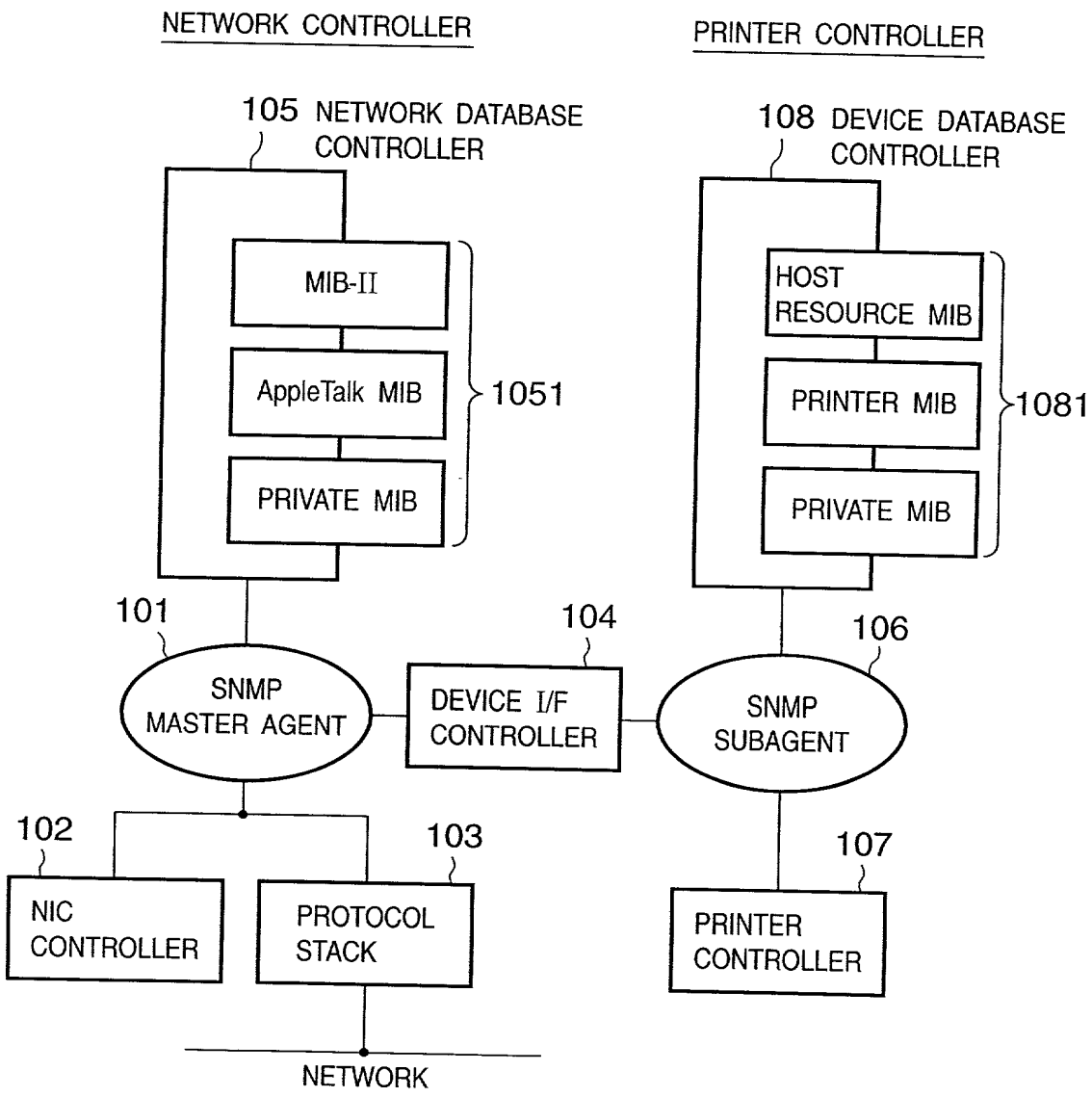

NETWORK CONTROLLER
PRINTER CONTROLLER
105 NETWORK DATABASE CONTROLLER
108 DEVICE DATABASE CONTROLLER
MIB-II
AppleTalk MIB
PRIVATE MIB
1051
HOST RESOURCE MIB
PRINTER MIB
PRIVATE MIB
1081
101
SNMP MASTER AGENT
104
DEVICE I/F CONTROLLER
106
SNMP SUBAGENT
102
NIC CONTROLLER
103
PROTOCOL STACK
107
PRINTER CONTROLLER
NETWORK

FIG. 2

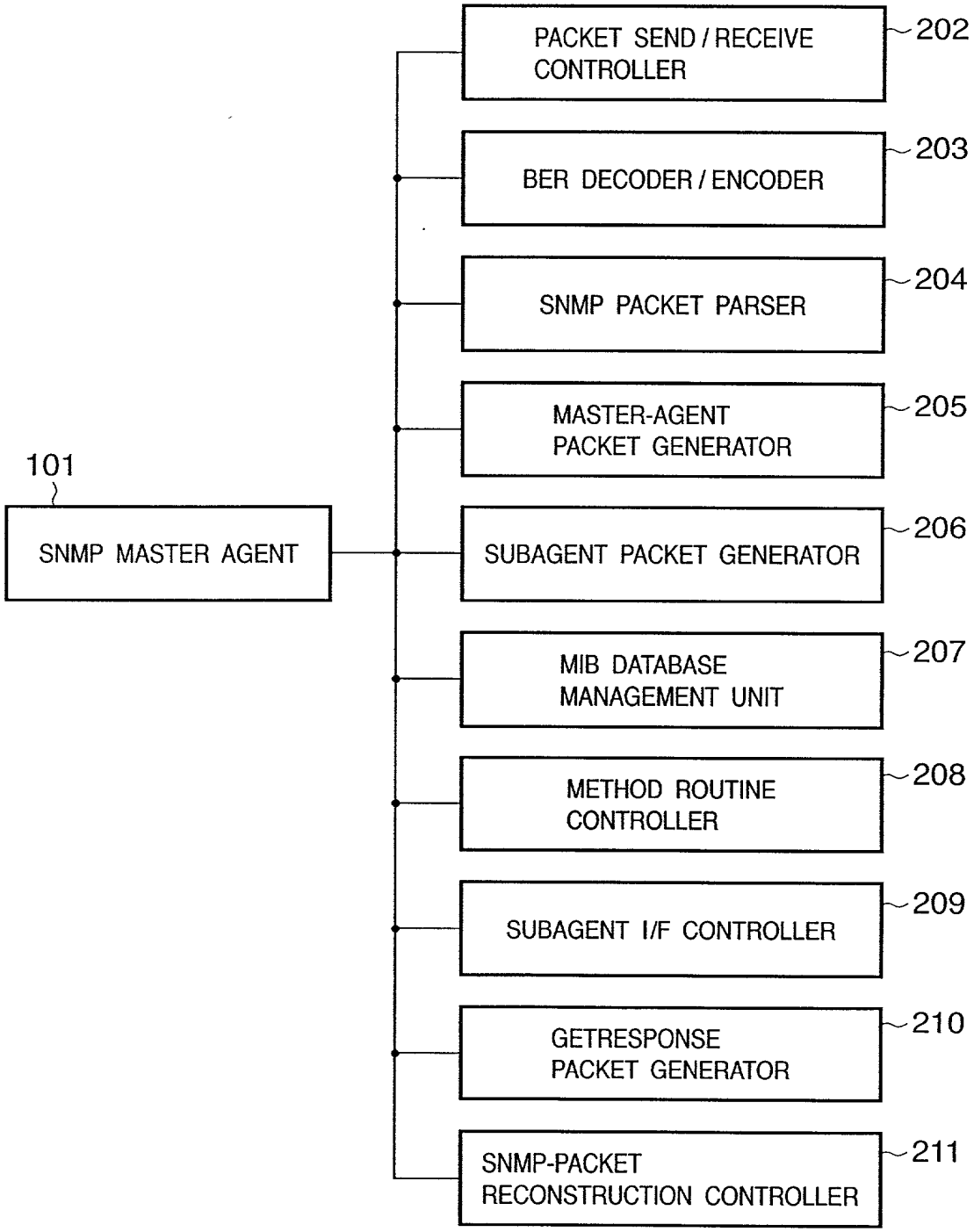
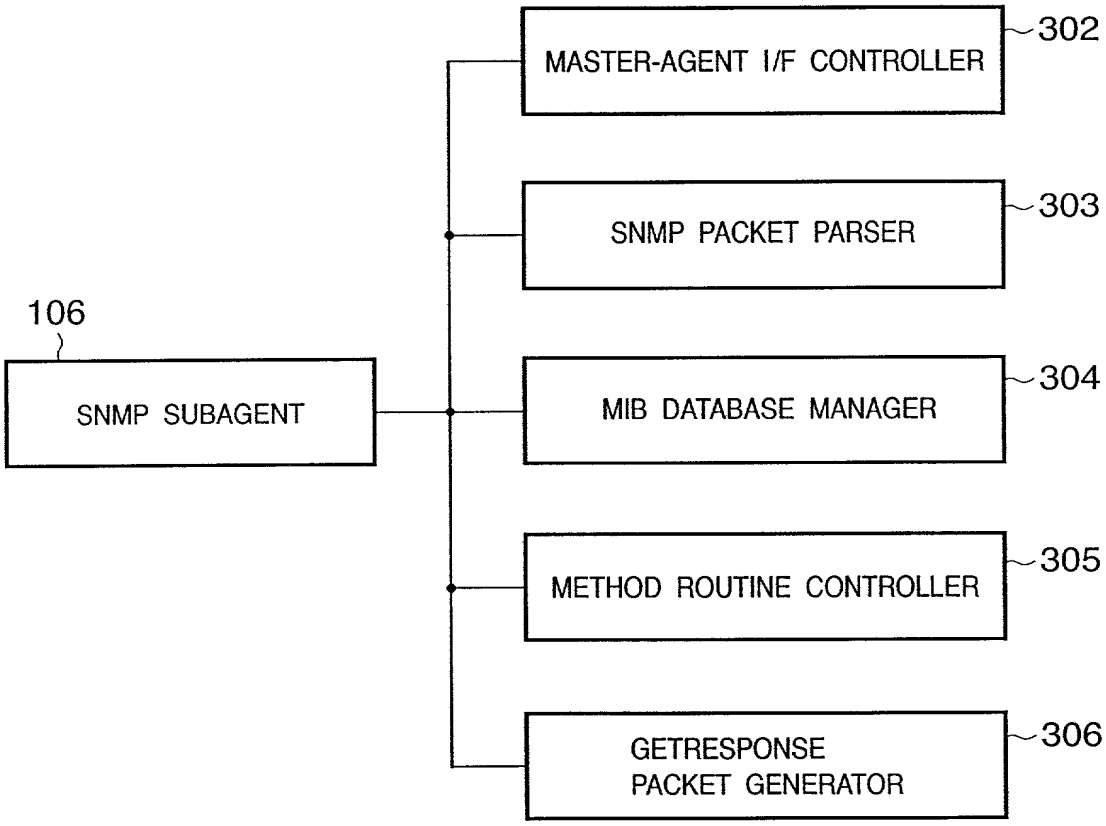

101
SNMP MASTER AGENT
PACKET SEND / RECEIVE CONTROLLER
202
BER DECODER / ENCODER
203
SNMP PACKET PARSER
204
MASTER-AGENT PACKET GENERATOR
205
SUBAGENT PACKET GENERATOR
206
MIB DATABASE MANAGEMENT UNIT
207
METHOD ROUTINE CONTROLLER
208
SUBAGENT I/F CONTROLLER
209
GETRESPONSE PACKET GENERATOR
210
SNMP-PACKET RECONSTRUCTION CONTROLLER
211

FIG. 3


MASTER-AGENT I/F CONTROLLER
302
SNMP PACKET PARSER
303
106
SNMP SUBAGENT
MIB DATABASE MANAGER
304
METHOD ROUTINE CONTROLLER
305
GETRESPONSE
PACKET GENERATOR
306

JP2007-065850A

FIG. 4

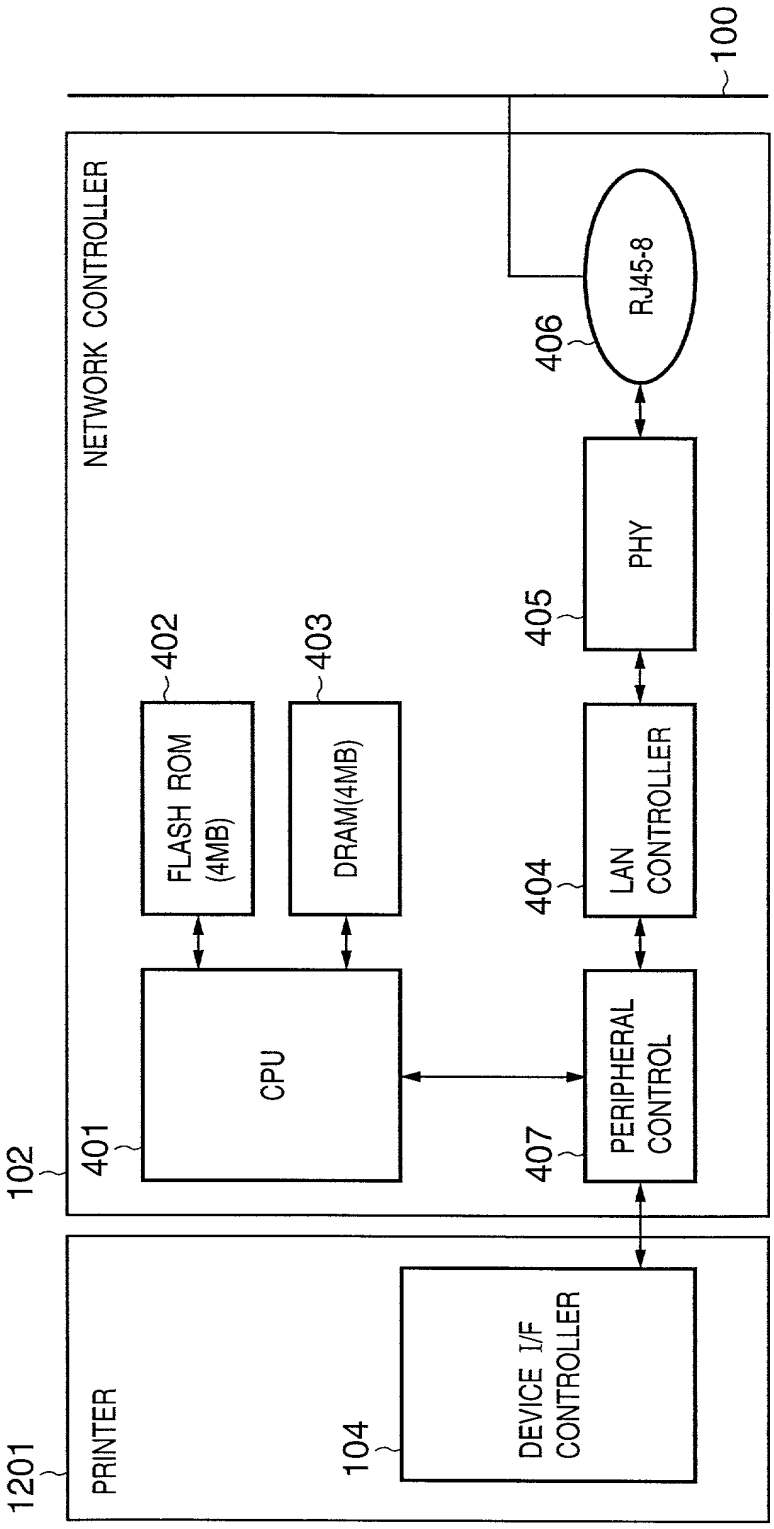


FIG. 5

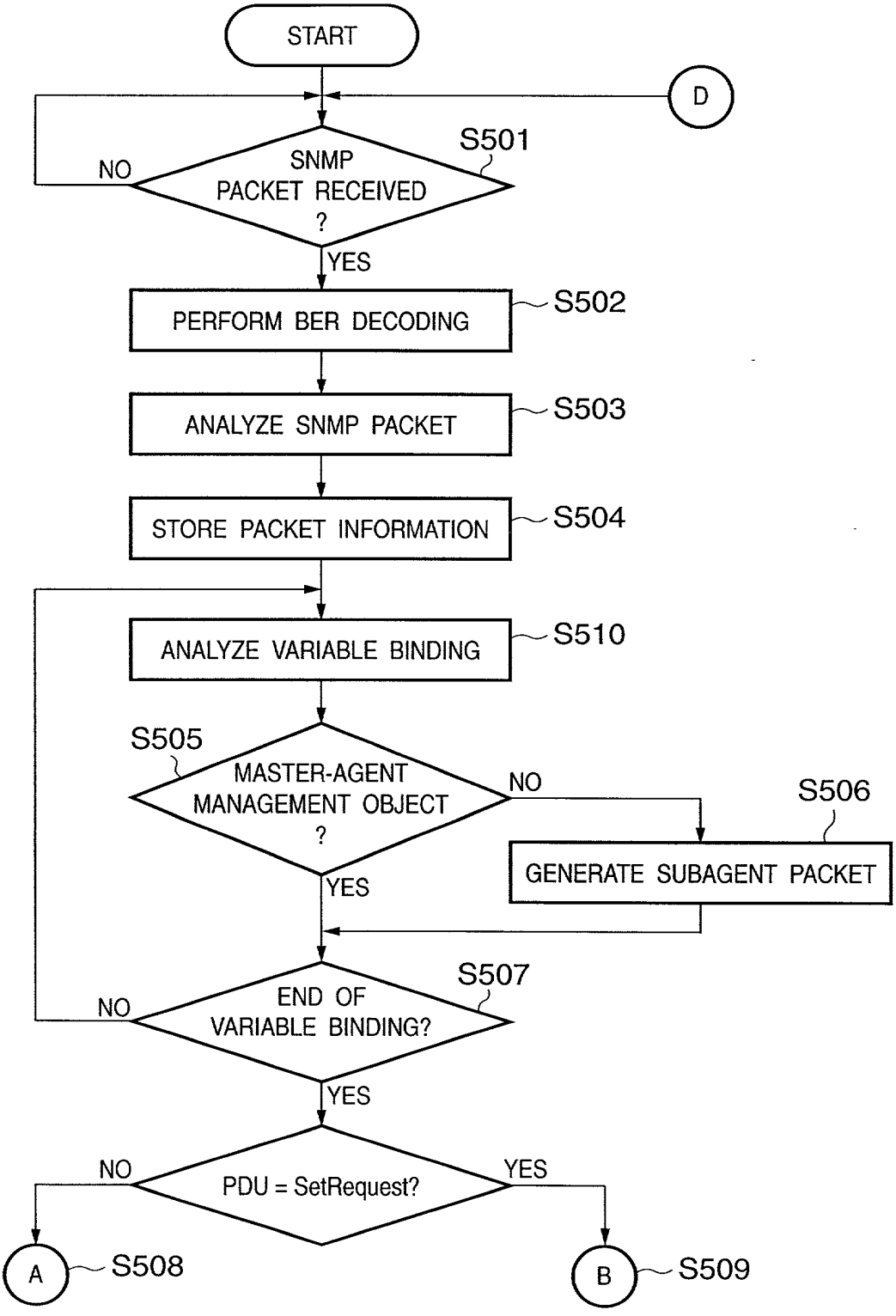

START
D
S501
SNMP PACKET RECEIVED ?
NO
YES
PERFORM BER DECODING
S502
ANALYZE SNMP PACKET
S503
STORE PACKET INFORMATION
S504
ANALYZE VARIABLE BINDING
S510
S505
MASTER-AGENT MANAGEMENT OBJECT ?
NO
S506
GENERATE SUBAGENT PACKET
YES
S507
END OF VARIABLE BINDING?
NO
YES
PDU = SetRequest?
NO
YES
A
S508
B
S509

FIG. 6

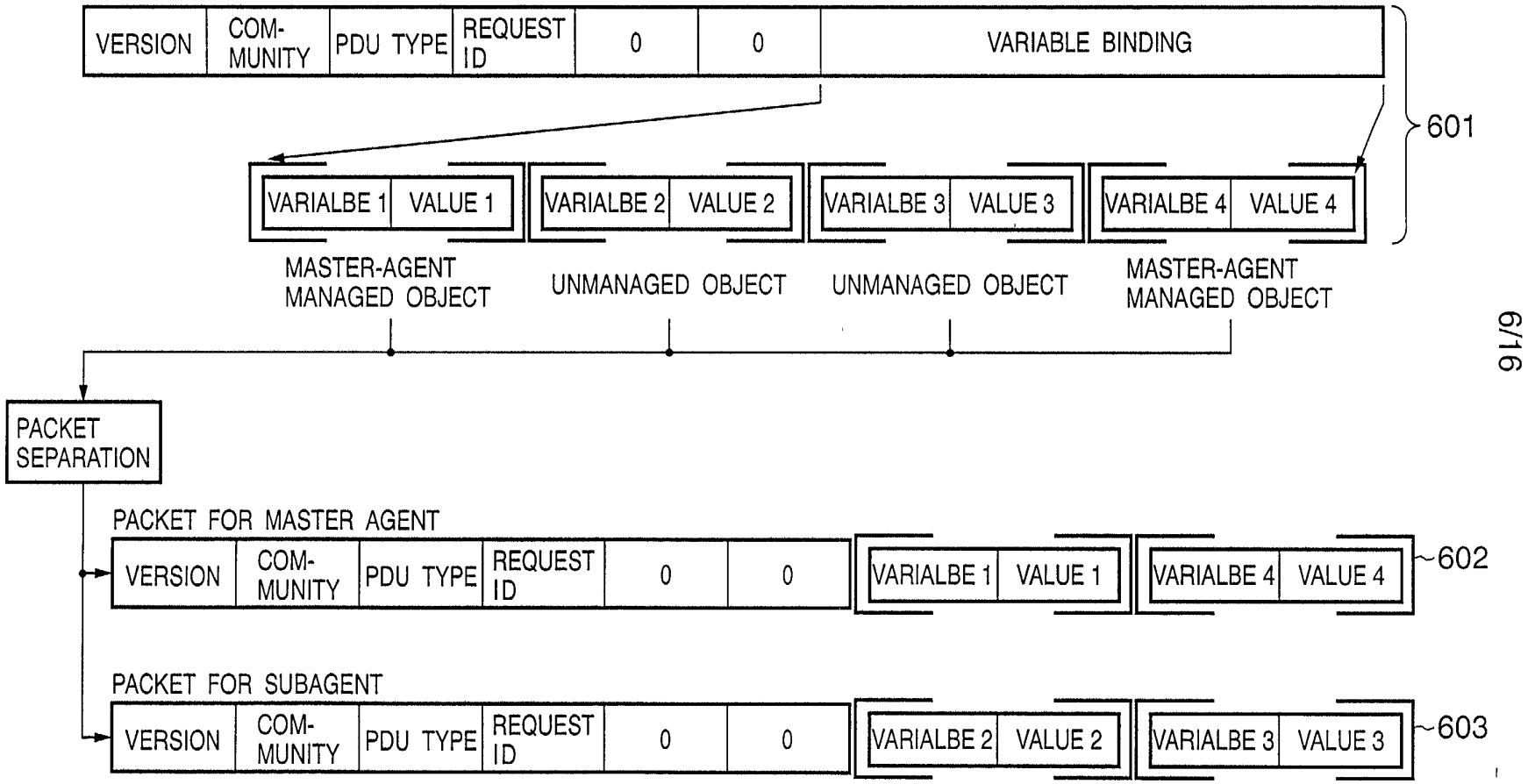

VERSION
COM-MUNITY
PDU TYPE
REQUEST ID
0
0
VARIABLE BINDING
601
VARIALBE 1
VALUE 1
VARIALBE 2
VALUE 2
VARIALBE 3
VALUE 3
VARIALBE 4
VALUE 4
MASTER-AGENT MANAGED OBJECT
UNMANAGED OBJECT
UNMANAGED OBJECT
MASTER-AGENT MANAGED OBJECT
PACKET SEPARATION
PACKET FOR MASTER AGENT
VERSION
COM-MUNITY
PDU TYPE
REQUEST ID
0
0
VARIALBE 1
VALUE 1
VARIALBE 4
VALUE 4
602
PACKET FOR SUBAGENT
VERSION
COM-MUNITY
PDU TYPE
REQUEST ID
0
0
VARIALBE 2
VALUE 2
VARIALBE 3
VALUE 3
603

FIG. 7A

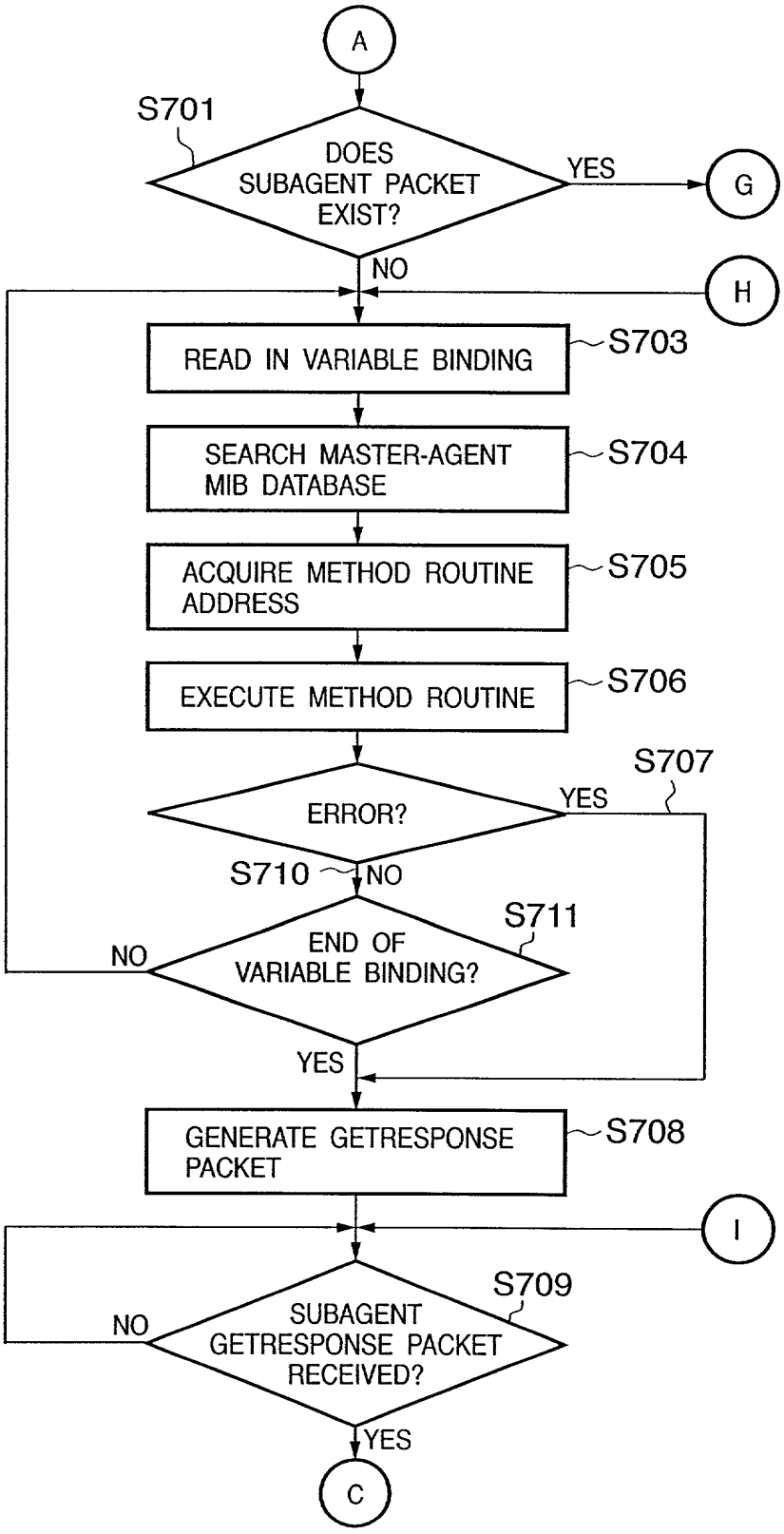

A
S701
DOES SUBAGENT PACKET EXIST?
YES
G
NO
H
READ IN VARIABLE BINDING
S703
SEARCH MASTER-AGENT MIB DATABASE
S704
ACQUIRE METHOD ROUTINE ADDRESS
S705
EXECUTE METHOD ROUTINE
S706
S707
ERROR?
YES
S710
NO
S711
END OF VARIABLE BINDING?
NO
YES
GENERATE GETRESPONSE PACKET
S708
I
S709
SUBAGENT GETRESPONSE PACKET RECEIVED?
NO
YES
C

FIG. 7B

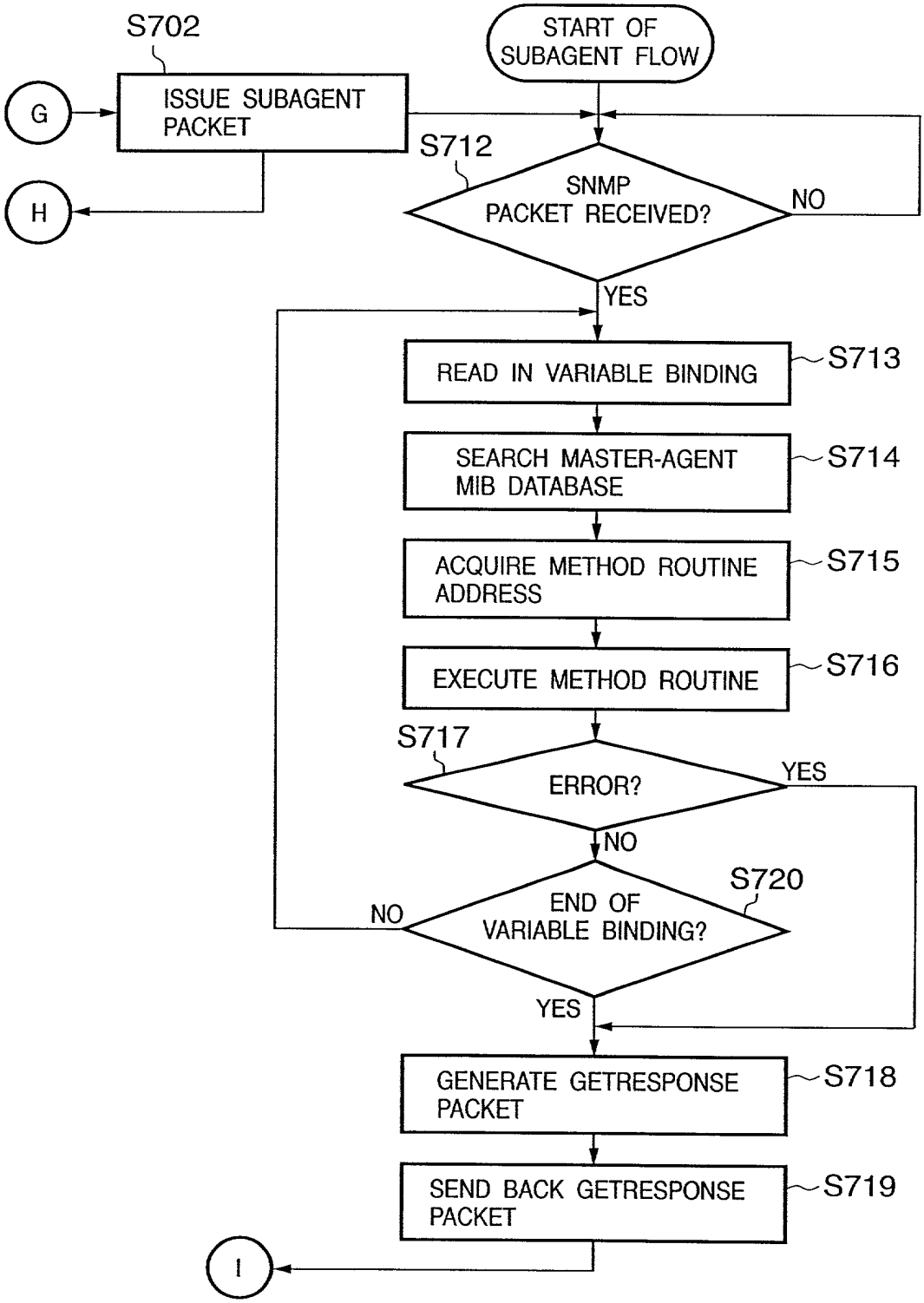

START OF SUBAGENT FLOW
S702
ISSUE SUBAGENT PACKET
G
H
S712
SNMP PACKET RECEIVED?
NO
YES
READ IN VARIABLE BINDING
S713
SEARCH MASTER-AGENT MIB DATABASE
S714
ACQUIRE METHOD ROUTINE ADDRESS
S715
EXECUTE METHOD ROUTINE
S716
S717
ERROR?
YES
NO
S720
END OF VARIABLE BINDING?
NO
YES
GENERATE GETRESPONSE PACKET
S718
SEND BACK GETRESPONSE PACKET
S719
I

FIG. 8

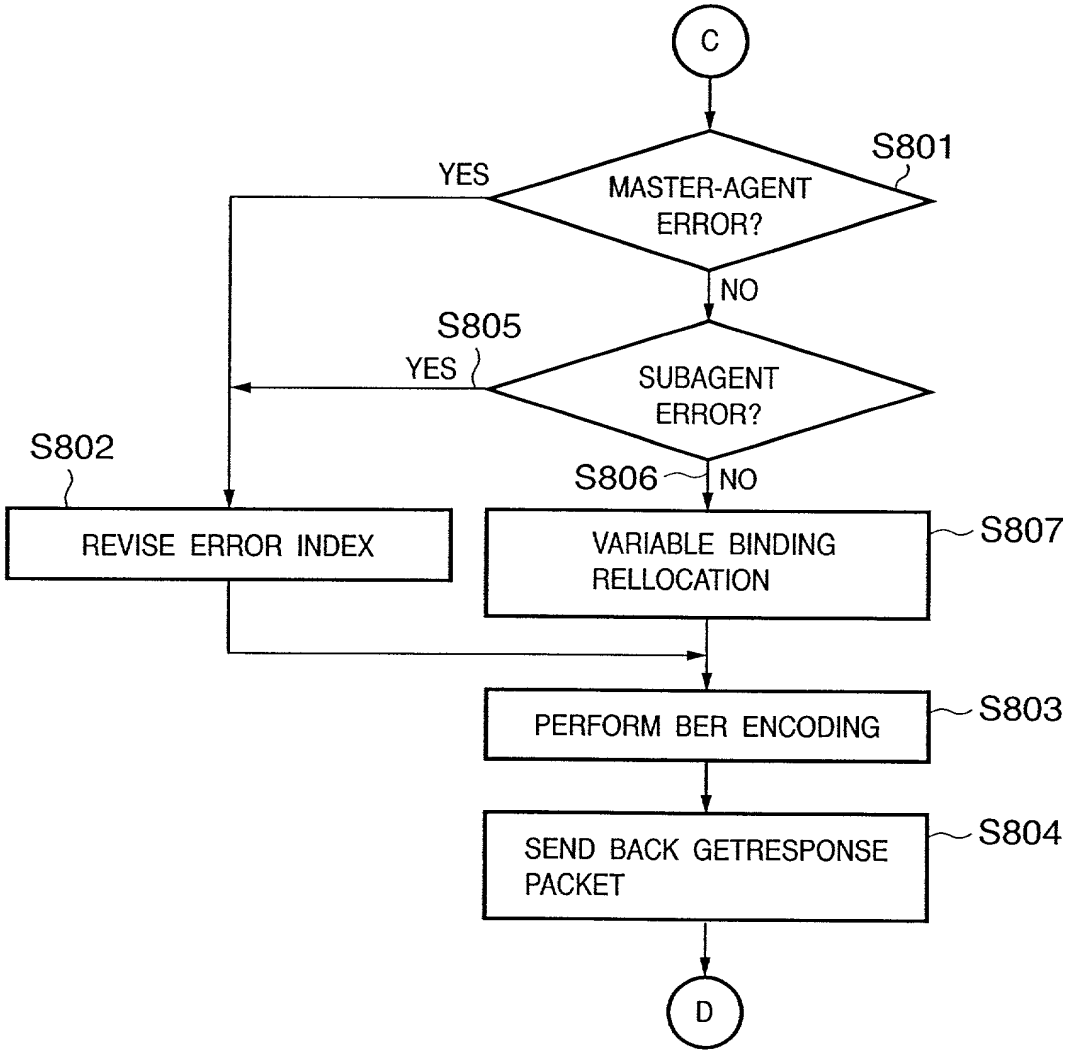

C
S801
YES
MASTER-AGENT ERROR?
NO
S805
YES
SUBAGENT ERROR?
S802
S806
NO
REVISE ERROR INDEX
VARIABLE BINDING RELLOCATION
S807
PERFORM BER ENCODING
S803
SEND BACK GETRESPONSE PACKET
S804
D

FIG. 9

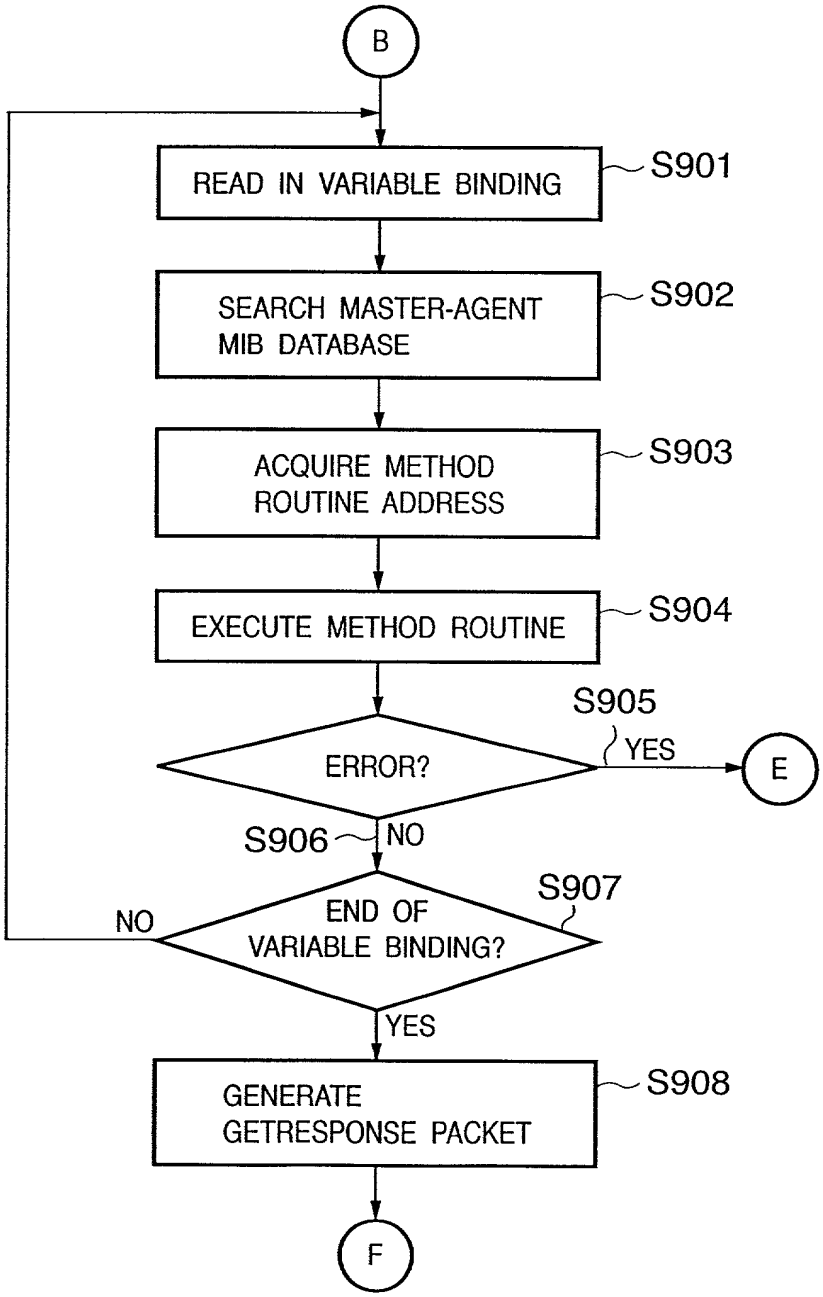

B
READ IN VARIABLE BINDING
S901
SEARCH MASTER-AGENT MIB DATABASE
S902
ACQUIRE METHOD ROUTINE ADDRESS
S903
EXECUTE METHOD ROUTINE
S904
S905
ERROR?
YES
E
S906
NO
S907
END OF VARIABLE BINDING?
NO
YES
GENERATE GETRESPONSE PACKET
S908
F

FIG. 10A

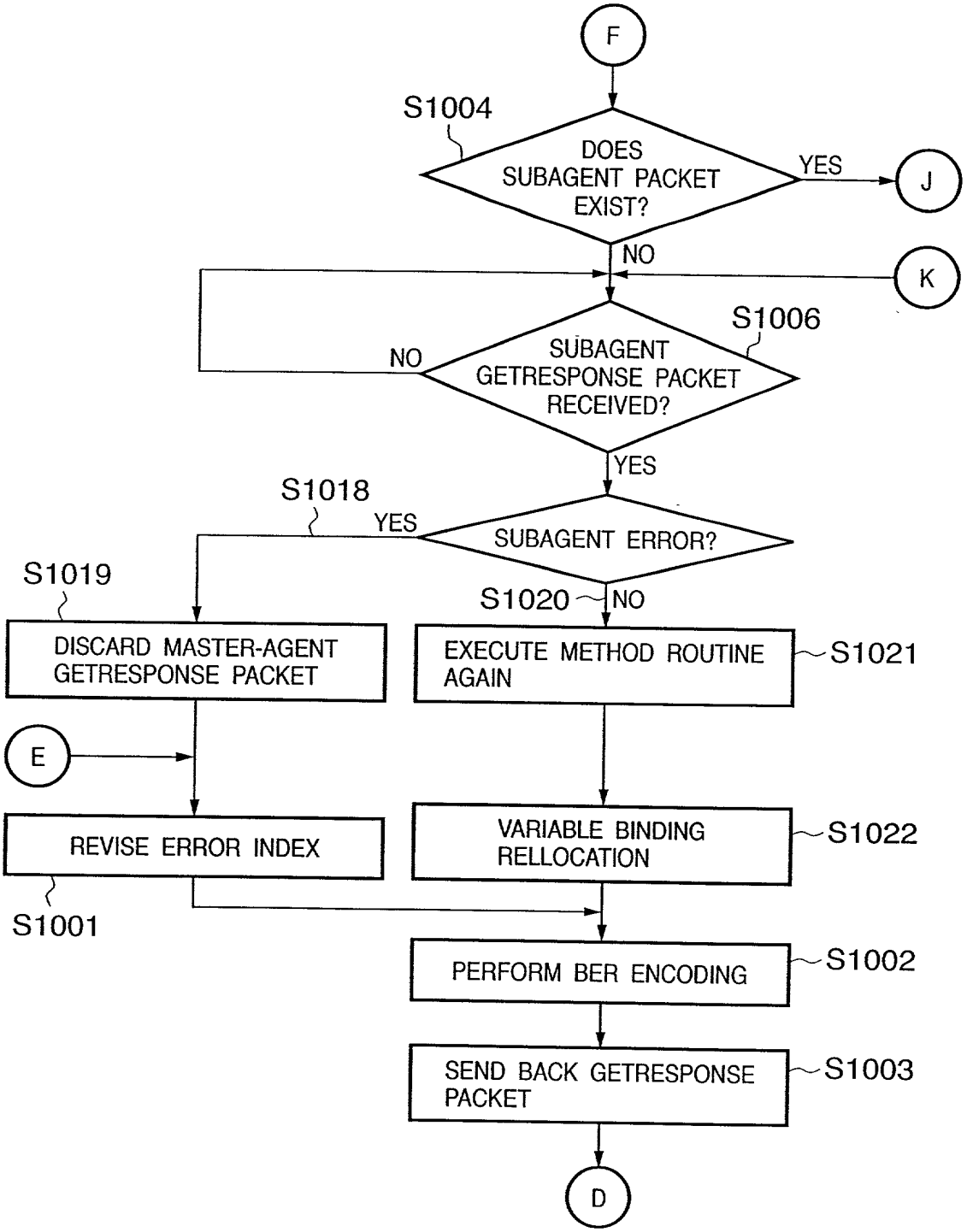

F
S1004
DOES SUBAGENT PACKET EXIST?
YES
J
NO
K
S1006
NO
SUBAGENT GETRESPONSE PACKET RECEIVED?
YES
S1018
YES
SUBAGENT ERROR?
S1019
S1020
NO
DISCARD MASTER-AGENT GETRESPONSE PACKET
EXECUTE METHOD ROUTINE AGAIN
S1021
E
REVISE ERROR INDEX
VARIABLE BINDING RELLOCATION
S1022
S1001
PERFORM BER ENCODING
S1002
SEND BACK GETRESPONSE PACKET
S1003
D

FIG. 10B

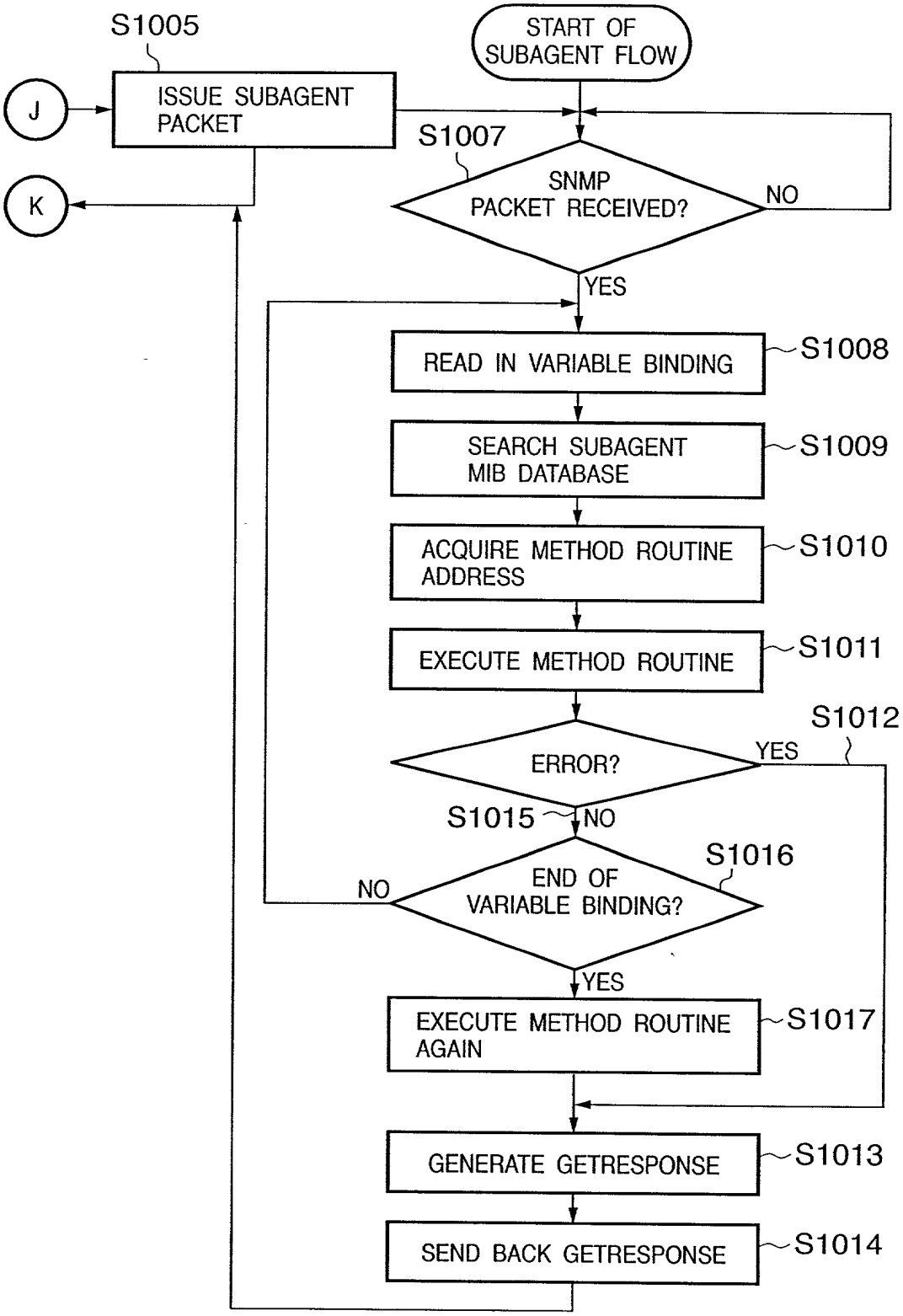

START OF SUBAGENT FLOW
S1005
ISSUE SUBAGENT PACKET
J
K
S1007
SNMP PACKET RECEIVED?
NO
YES
READ IN VARIABLE BINDING
S1008
SEARCH SUBAGENT MIB DATABASE
S1009
ACQUIRE METHOD ROUTINE ADDRESS
S1010
EXECUTE METHOD ROUTINE
S1011
S1012
ERROR?
YES
S1015
NO
S1016
END OF VARIABLE BINDING?
NO
YES
EXECUTE METHOD ROUTINE AGAIN
S1017
GENERATE GETRESPONSE
S1013
SEND BACK GETRESPONSE
S1014

FIG. 11

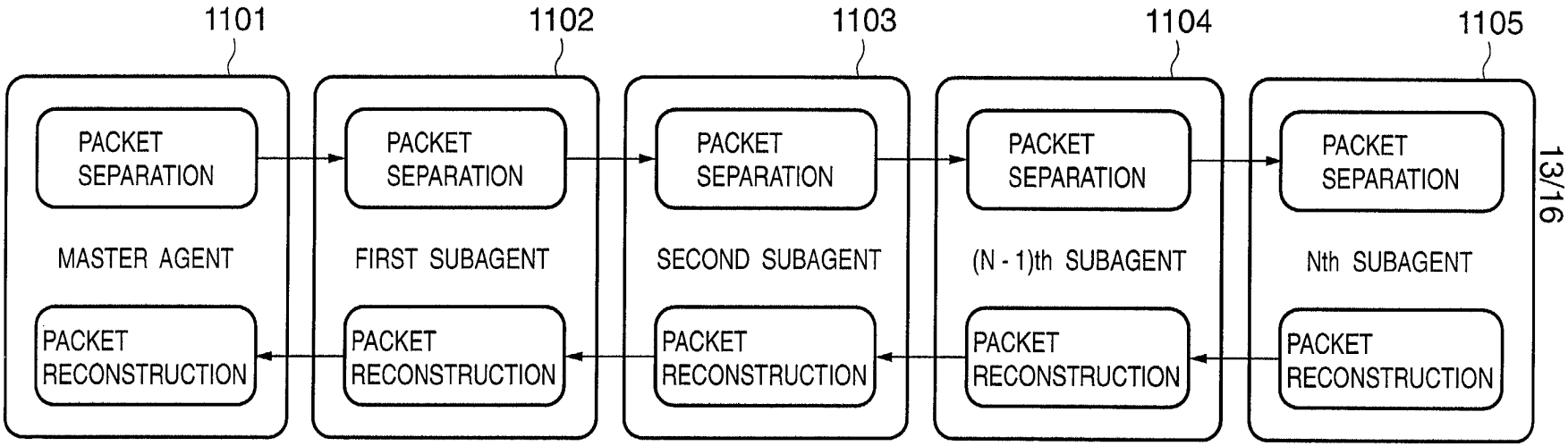

1101
1102
1103
1104
1105
PACKET SEPARATION
PACKET SEPARATION
PACKET SEPARATION
PACKET SEPARATION
PACKET SEPARATION
MASTER AGENT
FIRST SUBAGENT
SECOND SUBAGENT
(N - 1)th SUBAGENT
Nth SUBAGENT
PACKET RECONSTRUCTION
PACKET RECONSTRUCTION
PACKET RECONSTRUCTION
PACKET RECONSTRUCTION
PACKET RECONSTRUCTION

FIG. 12

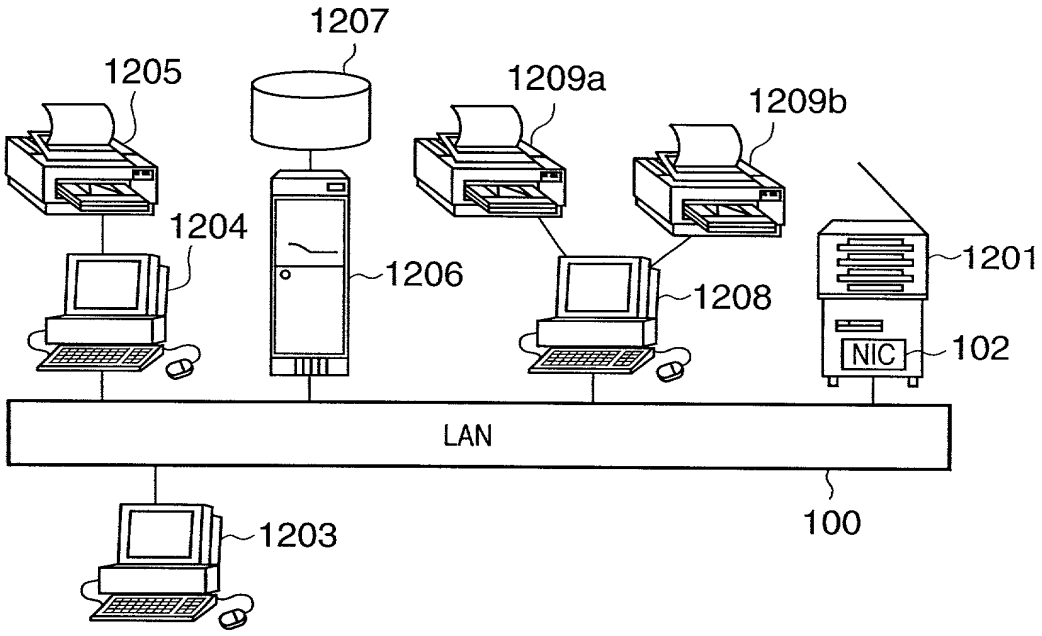

1207
1205
1209a
1209b
1204
1206
1208
1201
NIC
102
LAN
100
1203

FIG. 13

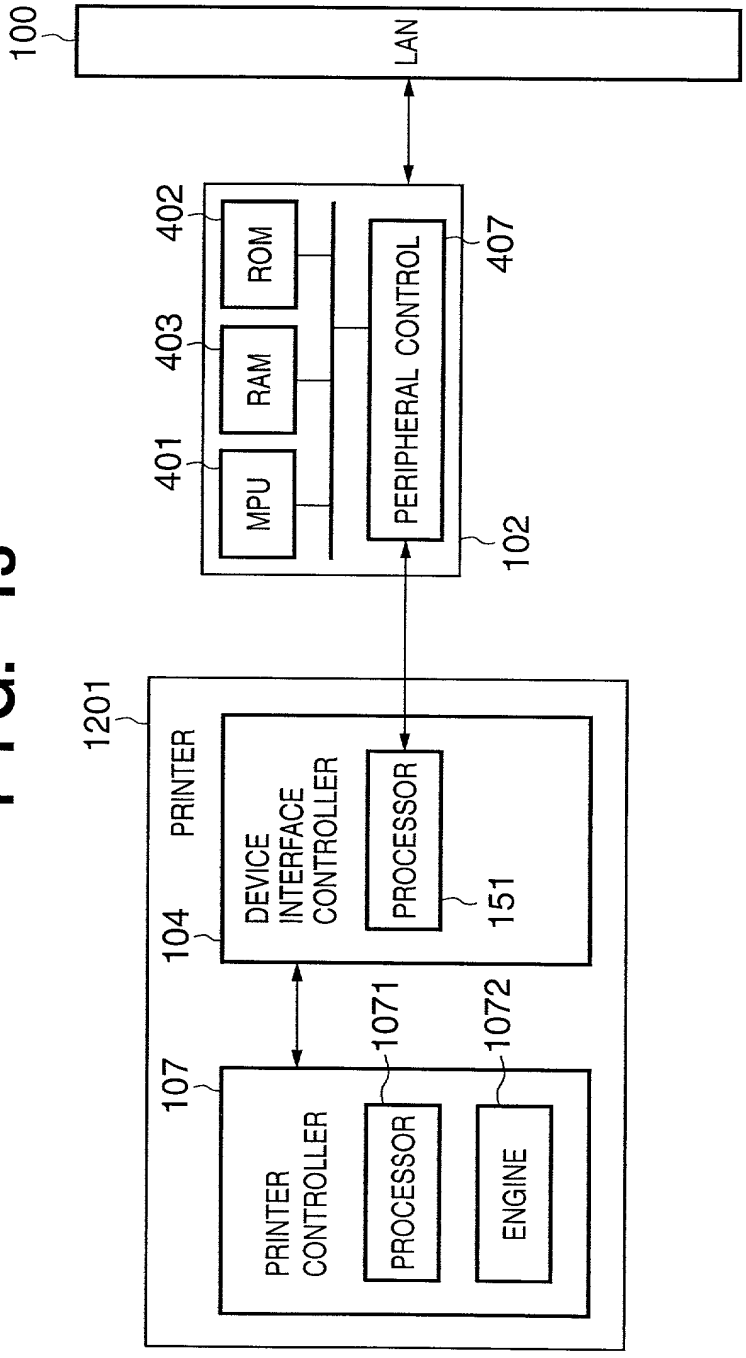
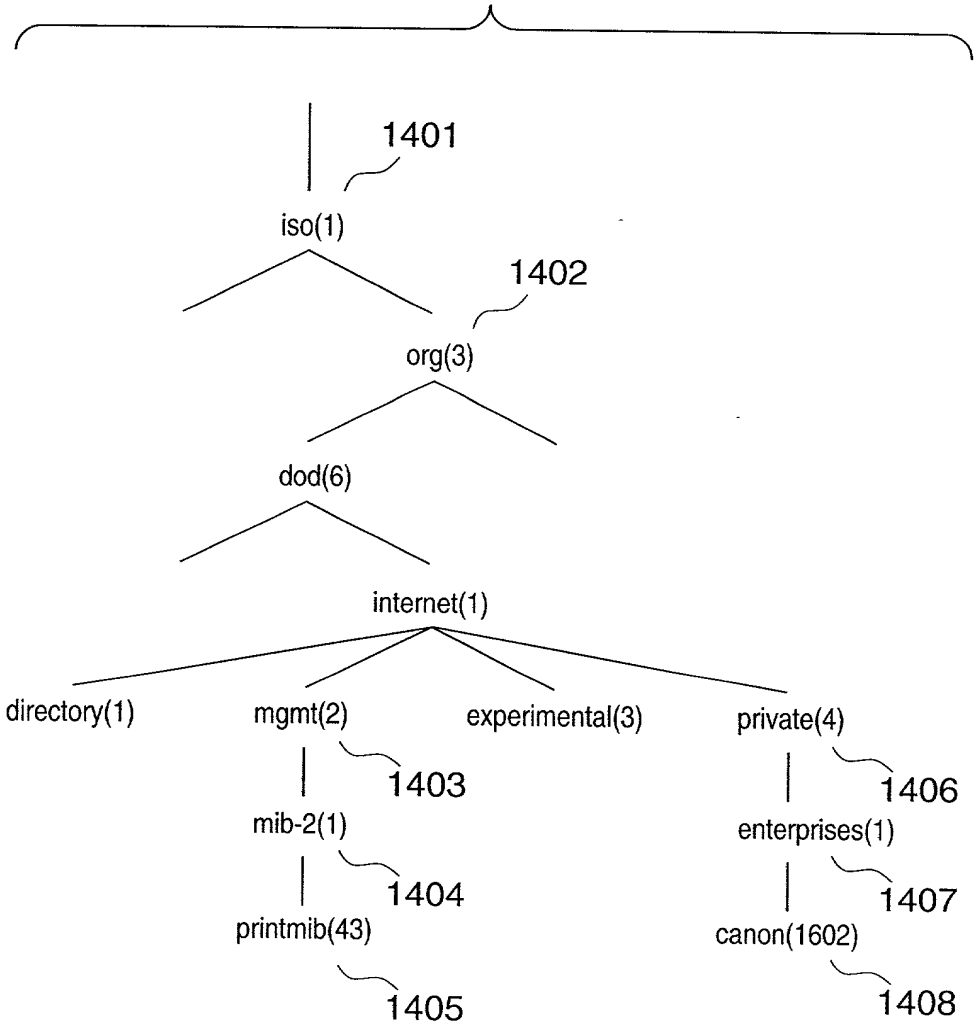

100
LAN
402
ROM
403
RAM
401
MPU
PERIPHERAL CONTROL
407
102
1201
PRINTER
104
DEVICE INTERFACE CONTROLLER
PROCESSOR
151
107
PRINTER CONTROLLER
1071
PROCESSOR
1072
ENGINE

FIG. 14


1401
iso(1)
1402
org(3)
dod(6)
internet(1)
directory(1)
mgmt(2)
1403
experimental(3)
private(4)
1406
mib-2(1)
1404
enterprises(1)
1407
printmib(43)
1405
canon(1602)
1408